



CAT Communicator

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Distance Links: Working Remotely at the APS

Imagine that you could run scans, collect data, observe beamline apparatus, and discuss an experiment *as it takes place* at the APS with a colleague—from over 1000 miles away! With the success of recent demonstrations in distance links conducted by scientists from the University of Florida (UF) using MR-CAT and SRI-CAT beamlines, the scenario described above will become reality in the very near future.

A long-distance interaction program between APS beamlines and faculty and students at UF was proposed by UF Professor Randy Duran. Tim Mooney (Experimental Facilities Division) and colleagues from the APS have been working on the project to establish audio, visual, and data channels between the MR-CAT beamline and UF. Mooney and his associates have also been developing the software for distance linkages over the last three years. A growing potential exists for interdisciplinary teams of scientists from different areas (e.g., physics, materials science, geology, agricultural science, biology, biomedicine, and chemistry), to use APS x-ray beams to conduct experiments. A distance link would have a significant, positive impact on the ability of researchers, university faculty, and students to access a user facility like the APS and share knowledge in real time. The benefits include reduced

travel expenses, increased exposure to working at a user facility, and training of students and postdocs.

EPICS-based beamline-control and data-acquisition software, which is available to all APS CATs, provides the capability of shared local and remote control over a network to the distance linkage. Additionally, video-server and camera-control software has been written to allow both remote and local users to use a Web

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Left: A screen shot from the Web-based video-server and camera-control software used to direct a remotely controllable camera mounted inside the 3-ID-D hutch.

browser to view activity in the experiment station. The equipment used in the distance link demonstration included a Sun workstation with a fixed camera and a remotely controllable camera installed in the experiment hutch. Both the control and data-acquisition systems and the video/camera software were demonstrated by running station 3-ID-D *remotely* from UF. For the demonstration, the audio connection between the APS and UF was accomplished by means of speaker phones.

Near-future plans revolve around refining the technology demonstrated during the preliminary work. Future distance operations will use audio linkages supported over the Internet. Support for multiplexed audio/video/camera-control systems is being developed so that several cameras can be used efficiently during distance linkages. The concept of using wireless cameras that could be attached to a shirt to provide a "researcher's eye view" of the experiment in progress will be investigated. More long-term goals will depend on the

funding of a grant currently being pursued. If funding is obtained, existing electronic notebook software will be further developed

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CAT Communicator is intended to provide timely information to Advanced Photon Source Collaborative Access Team members and associates.

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New Group Formed at the APS

A new group, the Experiment Floor Operations Group (EFOG), has been formed at the APS. New group leader Bob Ferry is working with a team of nine Floor Coordinators to provide a seamless daily interface between Users and the APS on the experiment hall floor. Technical support is the primary focus of EFOG's mission within the Experimental Facilities Division (XFD).

Bob Ferry came to the APS in 1990 and spent his first five years with the Accelerator Systems Division working as a project manager for vacuum systems. In 1995, he joined XFD as a Floor Coordinator and contract administrator. Ferry sees the formation of EFOG as a logical response to the new challenges facing Users and APS support staff as the APS shifts from primarily construction-based activities to

operations focused on experiments and data collection. The number of badged Users at the APS has grown from 33 in 1994 to more than 800 today. This growth, coupled with the shift to operations, has brought new

challenges, such as the Experiment Safety Approval process, the independent investigator program, and the handling and disposal of a wide variety of analytical samples. The role of the Floor Coordinator has been steadily evolving as the APS has seen this transition. EFOG plans to take advantage of the diverse backgrounds and skills of the

group members to provide multi-faceted support to Users.

Bob Ferry anticipates that his group will expand and continue to acquire staff in particular areas of technical expertise, such as radioactive sources, chemical safety, and electrical/mechanical safety, to continue to provide the best possible support to Users. Any questions about EFOG or technical support on the experiment hall floor can be directed to Bob Ferry at ext. 2-9495, or e-mail at bferry@aps.anl.gov. ▴



Above: Floor Coordinator Bill Wesolowski studies an EPICS (Experimental Physics and Industrial Control System) screen that monitors various ring systems.

Top Right: APS Floor Coordinators provide hands-on technical assistance on the experiment hall floor.

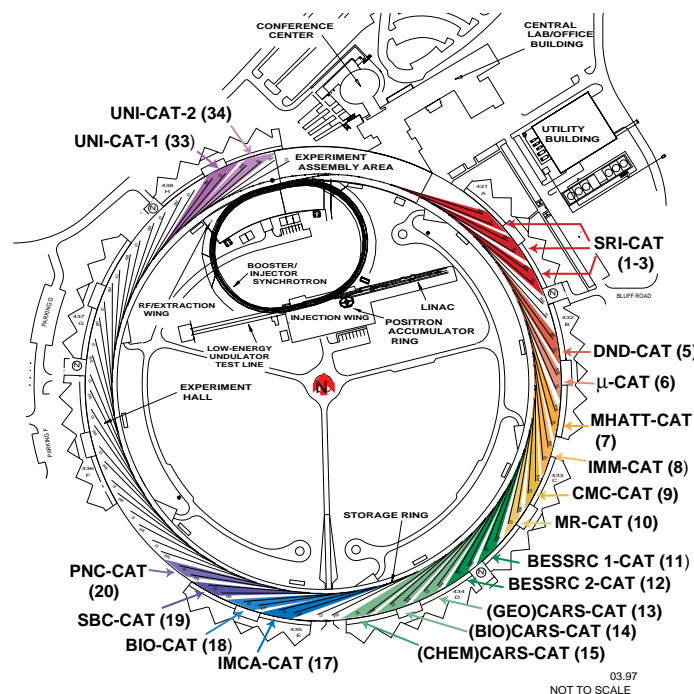
What's in Store on the Floor?

Currently, several more groups are looking to join the 14 CATs already occupying 20 sectors on the APS experiment hall floor. The Program Evaluation Board (PEB) has already approved proposals for three of the new groups: another sector for SRI-CAT dedicated to the development of sources and application of polarized x-rays in the energy range from 0.5 keV to 50 keV; the biologically based Structural Genomics CAT (SG-CAT); and Commercial CAT (COM-CAT), which plans to build and operate a “fee-for-service” beamline specifically targeted to the needs of Illinois industries. Two of these groups are already funded. SRI-CAT signed a Memorandum of Understanding (MOU) with the APS on May 4, and COM-CAT will sign an MOU as soon as its conceptual design and management plan are approved.

Letters of Intent from four more groups were recently approved by the PEB, with scientific proposals already in hand for two of them. These groups include two CATs focused on structural biology: Northeastern Crystallography CAT (NE-CAT) and Southeast Region Consortium (SER-CAT). The other two are Imaging CAT (IMG-CAT), which plans to develop the technique of diffraction-enhanced imaging, and High-Pressure CAT (HP-CAT), which is targeted at the needs of the entire high-pressure research community.

If all of these groups succeed in obtaining funds and producing satisfactory scientific proposals, conceptual designs, and management plans, 75% of the APS sectors will be allocated. ↴

CURRENT ASSIGNMENT OF SECTORS TO APS COLLABORATIVE ACCESS TEAMS



Current APS CAT Name (Acronym)	Sector(s) Location	Primary Focus
Basic Energy Sciences Synchrotron Radiation Center CAT (BESSRC-CAT)	11, 12	Basic energy sciences
Biophysics CAT (Bio-CAT)	18	Biophysics
Consortium for Advanced Radiation Sources CAT (CARS-CAT)	13, 14, 15	Structural biology, geo, chemical, and soil/environmental science
Complex Materials CAT (CMC-CAT)	9	Structural characterization of complex materials
E.I. DuPont de Nemours & Co.–Northwestern University–The Dow Chemical Company CAT (DND-CAT)	5	Surface and interface science, polymer science and technology, materials science, structural biology
Industrial Macromolecular Crystallography Association (IMCA-CAT)	17	Structural biology, macromolecular crystallography, and drug design
IBM–MIT–McGill CAT (IMM-CAT)	8	Dynamic phenomena in materials science and physics
Center for Real-Time X-ray Studies CAT (MHATT-CAT)	7	Physics, real-time structural studies, chemical science
Materials Research CAT (MR-CAT)	10	Materials research
Midwest Universities CAT (μ -CAT)	6	Materials research
Pacific Northwest Consortium CAT (PNC-CAT)	20	Environmental analysis, materials research, macromolecular crystallography
Structural Biology Center CAT (SBC-CAT)	19	Structural crystallography
Synchrotron Radiation Instrumentation CAT (SRI-CAT)	1, 2, 3, 4	Strategic instrumentation development
A University–National Laboratory–Industry CAT (UNI-CAT)	33, 34	Materials science, structural crystallography, condensed-matter physics, time-resolved studies, microprobe analysis

Prospective APS CAT Name (Acronym)	Primary Focus
Commercial CAT (COM-CAT)	Fee-for-service analyses
High-Pressure CAT (HP-CAT)	High-pressure research
Imaging CAT (IMG-CAT)	Diffraction-enhanced imaging for medical and physics research
Northeastern Crystallography CAT (NE-CAT)	Macromolecular crystallography
Southeast Region Consortium CAT (SER-CAT)	Structural biology
Structural Genomics CAT (SG-CAT)	Structural genomics

Preview of the Ninth Users Meeting at the APS

The Ninth Users Meeting will be held Tuesday-Thursday, October 13-15, 1998. The meeting will begin with registration at the Argonne Guest House on Monday evening, October 12. Tuesday's opening session will include an APS/DOE update, presentation of the third Compton Award, and the plenary Compton lecture given by the award recipient(s). The afternoon session will highlight the science performed by APS Users, followed by a poster session. The traditional banquet will be held at Chicago's Mid-America Club on the 80th floor of the Amoco Building. Wednesday morning will include more APS User science and the APS Users Organization business meeting and election. Workshops begin on Wednesday afternoon and will run through Thursday. Workshop durations, titles, descriptions, and organizer(s) are summarized in the table below. The meeting will include vendor exhibits throughout the week in the Gallery of Building 402. A student poster competition is also planned. Additional information will be posted on the meeting Web site at <http://www.aps.anl.gov/conferences/9um> as it becomes available.

Planned Workshops for the Ninth Users Meeting

Duration	Title	Description	Organizer(s)
Half day	Introduction to the APS	This workshop for nonspecialists in synchrotron radiation will describe how researchers can make use of the unique capabilities of the APS in their work. The basic properties of third-generation synchrotron-radiation sources and approaches and techniques covering a broad range of scientific disciplines will be discussed. Lectures are intended to provide background information for the other workshops at the meeting.	Denny Mills
Half day	Optics Metrology and Fabrication Workshop for APS Users	Capabilities of the APS Optics Metrology and Fabrication Group will be highlighted. Results of collaborations with Users will be presented in the areas of metrology, crystal fabrication and topography, thin-film deposition, and cooled-mirror design.	Al Macrander
Full day	Microscale and Molecular Environmental Science	New opportunities in environmental science at molecular and micrometer length scales are opening up at the APS. Presentations will focus on results of experiments conducted at the APS based on a variety of techniques such as x-ray absorption fine structure spectroscopy, x-ray fluorescence, x-ray scattering, and tomography.	Lynn Soderholm Steve Sutton
Full day	Structural and Functional Biology	This workshop will highlight advances and opportunities in structural biology and biophysics at third-generation synchrotron sources. Techniques represented will include macromolecular crystallography, fiber diffraction, solution scattering, x-ray absorption spectroscopy, and various imaging methods.	Cele Abad-Zapatero Grant Bunker
Full day	Microbeams: Techniques and Applications	X-ray microscopy is emerging as one of the most useful and exciting research tools at third-generation synchrotron sources. This workshop will cover the range of microbeam techniques, including spectromicroscopy, microdiffraction, phase-contrast imaging, and ultra-small-angle scattering.	Eric Isaacs Barry Lai Cyrus Safinya
Full day	Industrial R&D with Synchrotron Radiation	The results of a diverse array of User experiments will be presented to demonstrate the usefulness of methods such as diffraction, x-ray absorption spectroscopy, small-angle scattering, x-ray magnetic circular dichroism, and imaging. A summary of recent advances in synchrotron research by industry at the APS will be provided.	Bob Bubeck Kevin D'Amico Steve Wasserman

Machine Studies: Working for Peak Performance

Machine studies, conducted by APS accelerator physicists and engineers, are a critical component of the successful operation of the APS. Machine studies are planned as a part of each run, and schedules are published on the Web at <http://www.aps.anl.gov/xfd/operations/welcome.html>. These studies, which encompass a diverse range of activities, occupy only a small fraction of the total operational time of the machine. Because many storage ring parameters (which would otherwise remain unchanged during User beam time) are varied when machine studies are conducted, the beam is not usable by experimenters during this time. The studies focus on both short- and long-term goals aimed at continually improving the performance of the machine.

Short-term goals typically focus on current "real-time" needs of APS Users. A major short-term goal during the past year has been improvement of operational reliability. The objectives were to reduce unscheduled positron beam dumps and to increase the mean time between faults. Studies and improvements in the rf system (to reduce spontaneous crowbars), in power supplies (to curtail faults), and in communications have been carried out to address these objectives. Another short-term goal has been to examine the relationship between filling pattern and the lifetime of the stored beam. Machine studies shifts have also been dedicated to evaluating beam stability and testing of the real-time feedback system, two areas essential to the success of User experiments. Studies of beta functions and betatron tunes have been carried out to optimize a new stored-beam orbit for injection into small-aperture undulator vacuum chambers. Bunch purity has been evaluated and positron

accumulator ring performance has been fine-tuned to produce a clean bunch-filling pattern in preparation for the special operating mode involving bunch timing studies by Users. Some studies periods have been used to improve the efficiency of injection into the storage ring so that fills can be done without losing circulating positrons. In the near future, high-priority goals will focus on new challenges related to the quality of the beam delivered to Users and the changing requirements of User operations. These studies will include diagnostics work on the short-term stability of the stored beam and continuous monitoring of positron-beam emittance.

Many long-term goals are also addressed during machine studies periods. Examples include studies of the dependence of stored-beam lifetime on the x-y coupling, and studies looking at the parameters required to realize top-up mode (e.g., where the

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Credit Comes to the APS!

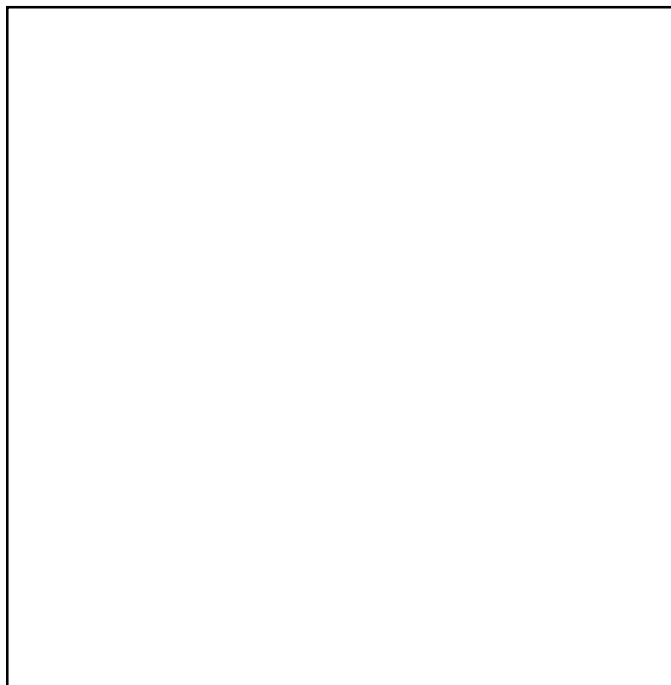
You can now use credit cards
(Visa and Master Card)
to pay for Argonne and APS
meeting registrations that are
submitted by mail or by fax!



Using credit cards will be a quick and easy way to pay registration fees.

BSR '98 (see related story, pg. 16) will be the first conference held at the APS to use this payment option.

New Signs Planned for Experiment Hall Floor



New signs have been developed to assist Users, employees, contractors, and visitors determine their location on the experiment hall floor (see example sign at left). The signs will designate position with a “You Are Here” marker showing location on the experiment hall floor relative to key areas such as the numbered laboratory office modules, the User Office, the APS Stockroom, the Bldg. 400 machine shop, and the nearest Floor Coordinator office, among others.

The signs, which are expected to be posted in late May 1998, will be placed on every third column on the inner edge of the experiment floor walkway around the ring. The signs should help new researchers and staff quickly learn the layout of the APS ring. ↴



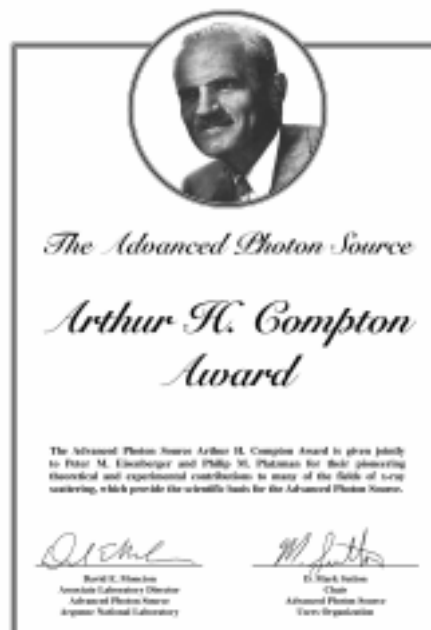
REMINDER: Nominees Sought for Compton Award

The Advanced Photon Source Users Organization (APSUO) sent out letters in March 1998, requesting nominations for the third APS Compton Award.

The APSUO urges you to please take time to identify individual(s) whose technical or scientific accomplishments merit recognition.

Details about submitting nominating information can be found at <http://www.aps.anl.gov/apsuo/compton.html>. ↴

July 1, 1998	Deadline for receipt of nominating information in the APS User Office
September 1, 1998	Notification of awardee(s) deadline
October 13, 1998	Presentation of Compton Award at the Ninth APS Users Meeting





Meet Ray Monroe

Ray Monroe joined the Experimental Facilities Division on March 12, 1998, as the newest Floor Coordinator. Ray comes to the APS after four and a half years in Argonne's Chemistry Division where he served in numerous staff positions. A recent work assignment in Chemistry was with the Metal Clusters Research Group, where he provided research support by operating lasers, gas-pressure systems, and temperature-control

devices during experiments. Before coming to Argonne, he spent many years in the chemical processing industry in a variety of manufacturing assignments, followed by several years in the educational field, teaching high school chemistry and physical sciences. In addition to a B.A. in chemistry from La Salle University, Ray also holds a MBA from Rutgers University.

Ray spends his leisure time with his wife, Rita, and their three sons. He has been known to swing a golf club and is a member of the Greens Team in the Argonne Reactor Golf League. ▴

Distance...Continued from pg. 2

to record and replay more of an experiment than can be practically achieved with the current design. This type of experimental record could potentially include links to relevant literature, records of decision-making on the progress of an experiment, offline measurements and calculations, time-stamped data from the online audio and video streams, and an archive of time-stamped beamline parameters.

This software could allow collaborators who are distant from an experiment either spatially or temporally to have a more complete understanding of the experiment, beyond simply a summary of the experimental parameters. The original, on-site experimenter could also benefit from the

ability to go back and review—even months after the experiment has been completed.

Telepresence technology at the APS beamlines has the potential to carry APS high-brilliance x-rays miles away from the facility and open up opportunities for research to many scientists and students who might otherwise miss the chance to use a world-class synchrotron facility. Research in the future may rely heavily on the co-location of colleagues through telecommunication technology. The work now being done by UF, MR-CAT, and the APS could serve as a blueprint for future distance links between the APS and the world. ▴

Chemical Safety at the APS

Q What is the most important thing I can do as an experimenter to insure that any chemicals or analytical samples I plan to use in my experiment are handled and disposed of in a safe manner here at the APS?



A First find out about the hazards associated with your chemical(s) and their use in your experiment design. By carefully studying the physical and chemical properties of your material(s) and reviewing all safety implications, you will be able to provide hazard information and suggest hazard controls to your CAT's safety coordinator. This will help reduce the risk associated with your work to a low, acceptable level.

Then complete and submit an Experiment Safety Approval (ESA) form well in advance of the start of your experiment. The ESA process depends on full disclosure and open communication between experimenters, their CAT, and the APS. The communication must extend beyond the initial submission of a complete and thorough ESA form. Any changes or modifications to the original experimental design should be reported. The experiment review process should be carried out far enough in advance of the actual experiment to allow sufficient time for hazard mitigation, including implementation of

- engineered controls, if necessary
- training and information (as required)
- procedural controls

The ESA form will also prompt the CAT and the APS to flag potential transportation issues associated with bringing chemical or analytical samples to the APS. Many CATs require experimenters to submit a form even more detailed than the ESA form to the APS. Advanced planning allows CAT and APS safety personnel to prevent problems before they can occur and possibly delay research.

Q I want to work with hazardous or toxic chemicals while I am at the APS. Am I permitted to work with these types of materials?

A The APS does not prohibit experimenters from using hazardous or toxic chemicals when they work at the APS. In fact, many of the experiments that have been done and are ongoing at the APS involve such chemicals. However, the APS *does require* that appropriate controls be put in place so that, for any experiment, the risk involved is low.

Q My experiment involves chemical(s) or sample(s) that are known or suspected to have significant health hazards associated with them. Is there anything else, beyond conducting a risk evaluation, that must be done before I can begin my experiment?

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A Chemicals that fall into the following categories

- carcinogens (known or suspect)
- mutagens (known or suspect)
- teratogens (known or suspect)
- high acute toxicity

must have *written* procedures in place to define all safety and work protocols associated with the transportation, storage, use, and disposal of these special health-hazard compounds. Guidelines are available (chapters 4-5 of the Argonne ES&H manual) to help prepare good written procedures for working with these types of materials.

Q What if I'm not familiar with potential hazards associated with my chemical(s) or sample(s)? What if my analytical samples have not been well characterized?

A If you are not familiar with the chemical or physical properties of a compound you will be working with, there are many sources that can be used to develop a safety and hazard profile of the material. Any manufactured chemical reagent is required by law to have a Material Safety Data sheet (MSDS) prepared for it. If you do not have a MSDS for a given material, you can call the manufacturer and request one. You, as an experimenter, are required to provide a copy of the MSDS to your CAT. The MSDS can provide important information about potential health and safety hazards that you must be aware of *before* attempting to ship, store, or use the chemical.

If your material is a lab-produced research sample, and no commercially prepared MSDS is available for it, the substance falls into the category of "analytical sample." For such analytical samples, a reasonably diligent hazard evaluation must still be conducted to identify possible health and safety concerns, the results of the evaluation must be communicated to the CAT, and handling and shipping procedures must be developed.

Q What if I am just using a very small amount of a toxic or dangerous material in my experiment? Because of the small quantity, it isn't considered hazardous, right?

A The material itself is still "hazardous" because of its inherent toxicity or other dangerous properties. But the *risk* associated with the material may be low because of the small quantity.

For example, one kilogram of the hazardous material silver fulminate (a shock-sensitive compound often used in "exploding" novelties like party poppers) is a very high-risk quantity compared to only one milligram of the material. The material is still hazardous, but in a low-risk quantity. In contrast, no one would consider one milligram of Ebola virus to be low risk. When evaluating hazards associated with your experiment, remember to think in terms of managing and minimizing risk.

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Safety Note: Safe Use and Storage of Electric Cables

Proper electrical cable installation and upkeep is an important aspect of safety at the APS. Electrical safety protocols at the APS and Argonne National Laboratory are derived from the National Electrical Code (NEC), NFPA 70 (National Fire Protection Association). The original Code was developed back in 1897 and has since evolved into the most comprehensive source of electrical safety information available.

The Code includes many sections related to cable types, fittings, sheaths, and trays, as well as guidance regarding correct usage, installation, and grounding. An explanation of Code requirements and guidelines for applying NEC codes to your work space can be found in the National Electrical Code Handbook.

Developing an awareness of cable safety around the beamlines and hutches will help maintain a safe work environment. The following tips will help in the evaluation of work areas.

Per NEC Code, “Cables are to be installed in a neat and workmanship manner.”

CABLE TRAY SAFETY TIPS

- All cables within the same cable tray must have insulation rating of the maximum voltage contained within that cable tray.
- Cable trays with metal dividers are allowed to separate high-voltage cables from lower voltage cables.

ION PUMP CABLE TIPS

- Ion-pump cables operate at about 6 kV. Even though the outer sheath is at



These clearly labeled cable trays at MHATT-CAT's 7-BM-B beamline properly separate high-voltage cables from motor and other instrumentation-related cables, keeping them organized and easy to trace.

ground potential, it is a current-carrying conductor and is *not* exempt from code. These must be kept separate from other cables using a separate tray or a metal tray divider within the same tray.

- When ion-pump cables emerge from the cable tray, they should not contact cables carrying lesser voltages.
- When ion-pump cables pass through a labyrinth or are lying on a hutch roof or floor, they should be sleeved with a flexible-metal shield and kept from contacting other cables.
- Ion-pump cables should be tagged “High Voltage.” These tags should be placed on the cables at points where personnel may come in contact with the cables,

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Safety Note...*Continued from pg. 12*

i.e., near the pump connection and near the controller connection.

IONIZATION GAUGE CABLE TIPS

- Ionization gauge cables operate at about 750 V and should be kept out of contact with the other cables.
- When ionization gauge cables pass through a labyrinth or are lying on a hutch roof or floor, they should be sleeved with a flexible metal shield.

DATA AND SIGNAL CABLE TIPS

- Signal cables (less than 30 V, less than 8 A) must be separated from power cables.
- Signal cables should be run in cable trays and not “tie wrapped” to the outside of the cable trays or existing conduit.
- Data cables emanating from the node room of each LOM may be run in the existing cable tray provided that
 - a. Data cable bundles are tied together every two meters.
 - b. Data cable bundles are labeled with the cable owner name and room/building or sector/rack at each end of the cable.
 - c. Data cables are placed on the side with the telephone wires, not on the side with the fiber-optic cables.
 - d. No power cables are allowed in the tray.

Technical questions about correct cable installation, use, and maintenance can be directed to Bill Wesolowski, APS Floor Coordinator, ext. 2-0300, waw@aps.anl.gov. ▴

APSUO Steering Committee Needs New Member Nominations

A nominating committee has been formed to seek new members for the APSUO Steering Committee. The Advanced Photon Source Users Organization (APSUO) works to facilitate the availability and effective use of the APS by the synchrotron radiation research community toward the goal of realizing the greatest overall scientific and technical benefits. All APS Users and potential Users are eligible to be voting members of the APSUO. The Steering Committee, which conducts the business of the APSUO, includes 12 regular members and one *ex-officio* member (the Chair from the past term).

Elections for the Steering Committee membership are held at APSUO Business Meetings during APS User Meetings, which are held approximately every 18 months. At each election, six new members are selected by the voting membership of the APSUO. Committee members serve for a total of three years.

Nominations for new members of the APSUO Steering Committee are now being sought for the next election on Wednesday, October 14, 1998 (during the Ninth APS Users Meeting). A slate of 12 nominees must be drawn before the election. If you are interested in becoming a Steering Committee member, or would like to suggest a candidate, please contact the following nominating committee members:

Eric Isaacs, Chair
ext: 2-0160
e-mail: edi@physics.bell-labs.com

George Srajer, co-Chair
ext: 2-3267
e-mail: srajerg@aps.anl.gov ▴

1998-1999 CAT Calendar

Date	Event
June 18, 1998	APSUO Steering Committee Meeting
June 19, 1998	Research Directorate Meeting
June 26, 1998	APS Picnic, Argonne Park
July 18-23, 1998	American Crystallographic Association Annual Meeting, Washington, DC
August 4-8, 1998	6th International Conference on Biophysics and Synchrotron Radiation
August 10-14, 1998	10th International Conference on X-ray Absorption Fine Structure
August 16-21, 1998	20th International FEL Conference and 5th FEL User Workshop, Williamsburg, VA
August 20, 1998	APSUO Steering Committee Meeting
August 21, 1998	Research Directorate Meeting
August 23-28, 1998	XIX International Linac Conference, Chicago, IL
October 12, 1998	Research Directorate Meeting
October 13-14, 1998	Ninth Users Meeting for the Advanced Photon Source
October 14, 1998	APSUO Steering Committee Meeting
October 14-15, 1998	APSUO User Meeting Workshops
August 23-27, 1999	18th International Conference on X-ray and Inner-Shell Processes

Machine Studies...Continued from pg. 7

stored current is held nearly constant to a part in a thousand or better).

Machine studies are performed to gain a better understanding of the performance of the machine and to meet the evolving

needs of User experiments. These activities are essential ingredients for the continued success of User operations. Machine studies have become an integral part of User success at the APS. ▴

Q I will be visiting the APS to conduct experiments. I'm planning to carry my samples with me on my flight and in my rental car. Do Department of Transportation (DOT) requirements governing the transportation of hazardous materials apply?

A Yes—the DOT regulations apply to your samples (including packaging and labeling requirements) and must be followed in order for the transportation of your samples to be conducted legally.

Q But the quantities of my samples are so small.....

A Your samples may be covered by exceptions written into the DOT regulations. These “small quantity exceptions” may apply to the quantity and types of samples you are transporting. In general, excepted quantities are limited to:

- 30 ml or less for certain categories of liquids
- 30 g or less for certain categories of solids
- 1 g or less for poisonous materials

The important thing to remember is that you need to get answers *before* you travel with *any* chemical(s) or sample(s). Check with your home institution first. If information about DOT regulations is not available there, safety personnel at the APS will be glad to answer all your questions and offer guidance. Contact Bruce Stockmeier at ext. 2-9394, or e-mail at bcs@aps.anl.gov for assistance. 🐶

A Change in Season.....



Warmer weather is on the way, and with it comes lighter weight clothing and shoes. Remember that when conducting hands-on work in the experiment hall, you should wear closed-toe, covered-heel shoes and long pants. Skirts may be worn if a lab coat is worn as well. Sandals and shorts are not acceptable.

Materials handling, hazardous chemicals, and construction activities all present potential hazards. Before starting your work, select clothing and personal protective gear appropriate to the hazards you might encounter in your work. 🐶

Biophysics and Synchrotron Radiation '98

Registrations for the 6th International Conference on Biophysics and Synchrotron Radiation are now being accepted. The second announcement for the meeting, containing the preliminary program and general conference information, was mailed in early April. More than 500 participants are expected to attend the conference which will be held August 3-8, 1998, at the APS. In addition to a diverse selection of technical sessions, the conference will feature evening "Meet the Experts" sessions in which several small groups of senior scientists will be available to meet with attendees interested in discussing experiments or other topics related to synchrotron-based research.

A Call for Poster Abstracts has also been issued, and conference participants are strongly encouraged to submit posters. Abstracts for posters are being solicited in the following areas:

- Macromolecular Crystallography
- Optics and Special Techniques
- Apparatus and Techniques
- Scattering from Noncrystalline Systems
- Microscopies and Medical Research
- X-ray, VUV, and IR Spectroscopies
- Macromolecular Complexes: The Frontier with Cell Biology

Submissions of abstracts for the poster session may be sent electronically over the World Wide Web or by e-mail. Abstracts

may also be submitted via fax or mail. Abstracts submitted by graduate students and postdoctoral appointees will be eligible for selection as Hot Topics (brief evening presentations chosen by a blue-ribbon panel). Abstracts must be received by June 26, 1998.

Special conference rates are being offered by United Airlines and the six hotels that are reserving blocks of rooms for the conference. To take advantage of the special hotel rates, reservations must be received before July 1, 1998. Conference attendees who travel between August 2 and August

10 can take advantage of the special airfare rate by mentioning a meeting ID code when making reservations with United Airlines.

The Biophysics Collaborative Access Team (Bio-CAT) will host a workshop Saturday, August 8, immediately following the conference. Attendees are invited to discover the facilities and support Bio-CAT can offer, and to participate in open discussions. The session will conclude with a late afternoon reception. Further information may be found at <http://biocat1.iit.edu/>.

Conference travel and lodging information, a preliminary program, and guidelines for preparation and submission of abstracts may be found on the conference Web site at <http://www.aps.anl.gov/conferences/bsr>. ▴



Services Available to CATs

Central Shops (CS) and Electronics Engineering (EE), two departments within Argonne's Electronics and Computing Technologies Division, are available to provide quality manufacturing support and electronics engineering services to the CATs and the User community at the APS. Full-service technical support is offered across a broad spectrum of engineering and manufacturing fields. These departments offer APS Users some distinct advantages.

Electronics Engineering

ENGINEERING SERVICES	TECHNICIAN SERVICES
System Design	Fabrication
Data Acquisition Systems	Prototype Circuit Fabrication
Control Systems	Printed Circuit Board Manufacturing
Safety Systems	Silkscreening
Electronic Communications	Printed Circuit Board Population
Hardware Design	Chassis Design and Assembly
Printed Circuit Board Design	Installations
Custom VME, VXI, CAMAC	Local Area Networks
Computer Interfaces	Control Cables
Motor Controls	On-Site Wiring
Power	Maintenance
Detector Development	Instrument Repair
X-Ray Detectors	Instrument Calibration
Software Development	Surface Mount Component Replacement
EPICS Drivers & Screens	
VxWorks Real-Time Systems	
LabView-Based Controls	
PLC Programming	
PC, SunOS, HP-UX, VMS	
Man Machine/Operator Interfaces	
Telecommunications	
Integrated Services Digital Network (ISDN)	
Synchronous Optical Networks (SONET)	
Video Teleconferencing Networks	
Dedicated Telecommunications Systems	

CS and EE are located close to the APS, making consultations and meetings easy to arrange and attend. These departments can provide CATs with skilled engineers and technicians who can work on site at the APS on the experiment hall floor (or, in the case of CS, in local satellite shops including the Bldg. 400 Optics Shop) to provide focused, tailored assistance. Additionally, these two departments offer the advantage of using Basic Ordering Agreements (BOAs) to secure specialty services not available in-house or to purchase raw materials. A collection of reliable outside suppliers and contractors has been established whose products and services can be accessed via BOAs, minimizing paperwork and providing quick turn-around times.

Left: SBC-CAT and EE personnel conduct a final check before the testing of a monochromator installed on one of the SBC-CAT beamlines.

Continued on pg. 18

Services...Continued from pg. 17

Central Shops

SHOP SERVICES	FABRICATION AND TECHNICAL SERVICES
Conventional Machining	Sheet Metal
Milling: Vertical / Horizontal Spindle Machines	Press Brakes: 11' Bed x 350 Ton Max.
Turning: Precision Tool Room Equipment	Shears: Power / Precision Close Tolerance
Grinding: Surface / Internal External / Thread	Punching: Precision 30 Ton / CNC Control
Straightening: Press / Flame	Nibblers
CNC Machining	Bending Rolls: Sheet / Plate / Box & Pan Breaks / Duct
Turning: High Precision/ Side Milling/ Bar Feed	Tube and Pipe Bending: Precision / CNC Control
Milling: Vertical / Horizontal Spindle Machines	Plastic Forming, Fabrication, and Welding
High Speed Spindle: Mill / Profile Grind	Field Installation: Enclosures / Ductwork / Guards
EDM (Electrical Discharge): Wire and Ram	Welding and Brazing
Optics Shop - Ceramics / Crystalline Material	GTAW / GMAW / SMAW / Oxy-Fuel Welding
Ultrasonic Mill / Drill / Core / Slot	Electron Beam Welding / Brazing
Diamond Sawing / Drilling / Lapping / Polishing	Resistance / Spot Welding Brazing / Soldering
Crystal Orientation and Inspection	CNC GTAW Systems and Automated Systems
Cleaning - Components / Materials	Field Welding: Portable Gas-Driven Equipment
Aqueous Washer	ASME and AWS Qualified Personnel and Procedures
Ultrasonic Tanks	Technical Services
Machine Repair	Manufacturing Engineering
Equipment Installation	Welding Engineering
Preventative Maintenance Service	Vendor Services and Subcontract Specialty Services
Laser Interferometer / Vibration Analysis	Materials Service and Standing Orders
Field Repairs / Welding / Machining	Inspection and Measuring: Manual / CMM Systems
Satellite Machine Shops - Seven Locations	Leak and Pressure Testing: Vacuum / Hydro
Hot Shop: Irradiated Materials, Uranium, and Thorium	NDE Capabilities and Subcontract Testing Services

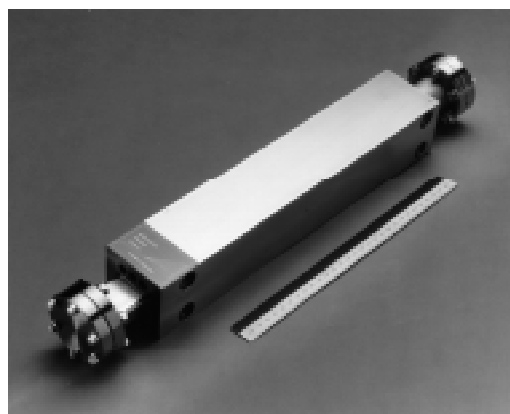
Further information about the manufacturing support and electronics engineering services available from CS and EE can be found at the departmental Web sites.

For Electronics Engineering services:
<http://www.ee.anl.gov>

For Central Shops services:
<http://www.anl.gov/CS/>

For Optics Shop services:
<http://www.anl.gov/CS/optics.html>

These pages include detailed summaries of the technical support available and contact information (e-mail addresses and phone numbers) for staff members who can discuss your project and ideas with you. ▲



Above: Photon shutter designed by the APS Experimental Facilities Division and manufactured by Central Shops for SPring-8, Japan.



Left: Silicon monochromator crystal manufactured in the Optics Shop for the APS. The Optics Shop has experience working with more than 150 different materials that are used in the manufacture of optical elements or precision instrument components.

APS 1998-1999 Operations Schedule

The Beamline Operations Information page on the WWW maintains up-to-date calendars and schedules for APS operations. The home page at <http://www.aps.anl.gov/xfd/operations/welcome.html> provides links to useful information including the beamline operations schedule for the current operating cycle, the long-range operating calendar, the on-shift Floor Coordinator schedule, schedule archives, and more.

This schedule represents the most up-to-date information available at printing time. 🐭

June						
M	T	W	Th	F	Sat.	Sun.
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

July						
M	T	W	Th	F	Sat.	Sun.
		1	2	3*	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

August						
M	T	W	Th	F	Sat.	Sun.
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	28	30
31						

September						
M	T	W	Th	F	Sat.	Sun.
	1	2	3	4	5	6
7*	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

October						
M	T	W	Th	F	Sat.	Sun.
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

November						
M	T	W	Th	F	Sat.	Sun.
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26*	27*	28	29
30						

December						
M	T	W	Th	F	Sat.	Sun.
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24*	25*	26	27
28	29	30	31*			

January						
M	T	W	Th	F	Sat.	Sun.
				1*	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

February						
M	T	W	Th	F	Sat.	Sun.
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28

Key			
	Start Up/Machine Studies		User Operations
	Scheduled Maintenance	*	Laboratory Holiday

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Advanced Photon Source
Argonne National Laboratory
Building 401, Room B1154
9700 S. Cass Avenue
Argonne, IL 60439-4800

Come on out..... to the APS Picnic on Friday, June 26! There will be great food (fried chicken, hamburgers, Italian sausage w/ sweet peppers, baked beans and more), volleyball, the company of good friends, etc. Contact the User Office for details.

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